TITLE OF THE INVENTION

STATUS RIBBON FOR DISPLAY FOR MULTIPLE CHANNELS/CODES

BACKGROUND OF THE INVENTION

The present invention relates to the display of signal characteristics, and more particulary to a status ribbon for display of signal characteristics for multiple channels/codes.

A band of frequencies may contain many channels of content, such as in cable television systems, or a single digital communications radio frequency (RF) channel may contain many codes, such as in wireless telephone systems. An operator trying to quickly assess the health of such systems would like a way to scan the power, or some other measurement parameter, for each channel or code and view the results in a single display. Such a single display of power for multiple channels of a cable television system is disclosed in U.S. Patent No. 4,685,065 for a portable spectrum analyzer. In this implementation the single display consists of a bar graph where the channel number is along the horizontal axis and the power is along the vertical axis, with the height of the bar indicating the relative power for each of the channels. This display is limited on the number of channels that may be compacted into a signal view. Also this does not address the need to translate measured values into pass/fail values for easier interpretation for the operator.

Also for the digital communications RF channel with many content "codes", the operator may want to scan the activity for each code and view

the results on the single display. However there may be more codes than a display device has pixels horizontally. Prior art does not represent multiple codes in a single indicator.

What is desired is an alternative display of signal characteristics for multiple channels/codes that compacts many more channels/codes into a single view, translates measured values into pass/fail values, and is intuitive for an operator, or alternatively compacts many codes within an RF channel into the single view so a single indicator represents multiple codes.

BRIEF SUMMARY OF THE INVENTION

Accordingly the present invention provides a status ribbon for display of signal characteristics for multiple channels/codes. The status ribbon has a plurality of stripes representing channels within a frequency range of interest or codes within a digital communications RF channel. A characteristic, such as color or brightness, of each stripe represents a value for the channel(s) or code(s), such as a value range, a pass/caution/fail condition value, code activity, power (maximum or average), spreading factor, etc. A draggable window also may be provided for selecting a subset of contiguous stripes for additional detail. The subset may be displayed textually adjacent the status ribbon and may include channel number, frequency, signal standard, etc. Also for stripes representing multiple channels/codes an additional status ribbon may be displayed which includes as separate stripes each channel/code within the window.

The objects, advantages and other novel features of the present invention are apparent from the following detailed description when read in conjunction with the appended claims and attached drawing.

BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING

Fig. 1 is a plan view of a status ribbon for display of signal parameters for multiple channels according to the present invention.

DETAILED DESCRIPTION OF THE INVENTION

Referring now to Fig. 1 a status ribbon **10** is shown having a band of vertical stripes **12**, each stripe pertaining to one or more channels in a frequency range of interest or to one or more codes within a single digital communications RF channel. The color or brightness of the stripes represents a value for a signal parameter for the channel(s)/code(s), such as maximum or average power, or the presence or absence of activity in the codes each stripe covers. This value may be represented either as a scalar value according to a color gradient or as a converted status value, such as pass/caution/fail. For example for the grey scale example shown “white” may be equivalent to “pass”, “grey” may be equivalent to caution and “black” may be equivalent to “fail.” Or alternatively “white” may represent a value greater than 3 dB, “grey” may represent a value between 0-3 dB, and black may represent a value less than 0 dB. For a color representation “green” may represent “pass”, “yellow” may represent “caution” and “red” may represent “fail.” Or alternatively the colors may represent particular power levels or code activity levels.

In the most compressed ribbon **10** each stripe **12** may represent a multiplicity of channels/codes, as indicated above, through any decimation method. For instance, if the stripes represent power, a single stripe representing several channels/codes may display maximum power across the several channels/codes or average power. If the stripe represents pass/fail, the decimation method may indicate “fail” if any of the included channels/codes is “fail” and indicate “pass” if all are “pass.” The expanded views, either text table or zoomed in ribbon, are useful for viewing the underlying per-channel/code status that is buried by the decimation.

Additionally there may be a draggable box **14** around a set of contiguous stripes **12**, or some other visible device to allow a user to select a subset of the channels within the frequency range of interest or codes within a single channel in order to view additional detail. The additional detail may include channel number, signal standard, frequency, etc. or code number, power, spreading factor, etc. The additional detail may be represented in a text table displayed near the status ribbon **10**. Also an expanded status ribbon **10'** may be displayed where each stripe **12'** represents only a single code. Also a line or bar graph may be shown to display detailed values expanded for each individual channel/code in the expansion zone indicated by the window **14**.

Thus the present invention provides a status ribbon having stripes for each channel/code or each decimated group of channels/codes with the color or brightness of each stripe indicating a value for a signal parameter or a pass/caution/fail value.